



Office of River Protection

Nuclear Cleanup Caucus Briefing March 9, 2006

Roy J. Schepens, Manager



Office of River Protection



CH2MHILL
Hanford Group, Inc.



Bechtel National, Inc.



Washington Group
International



U.S. Department of Energy
Office of River Protection





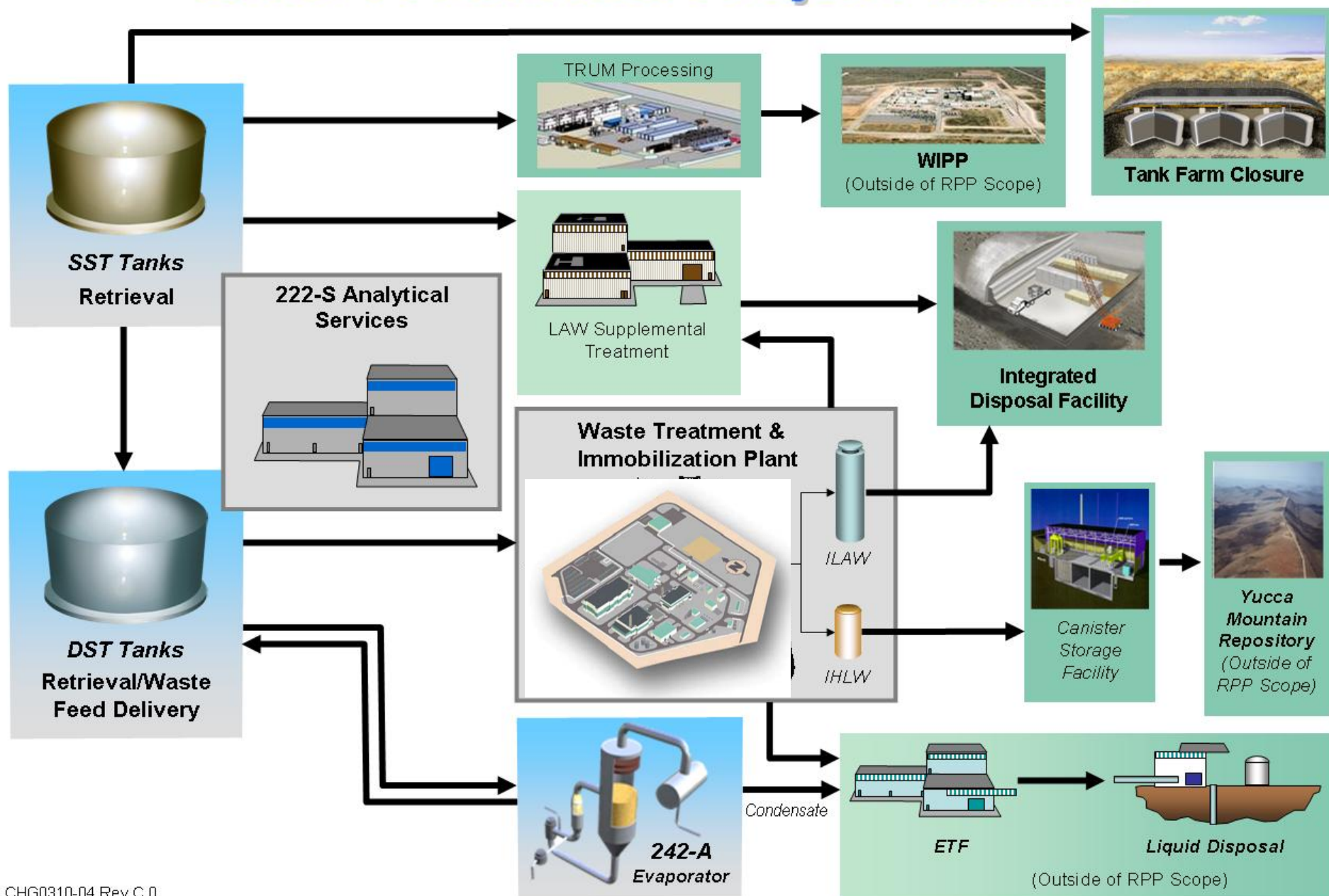
ORP Safety: Our Foundation for Success

- ❑ Focus on continuous improvement
- ❑ Institutionalize a learning organization – Learn from mistakes
- ❑ Invest in system safety training and leadership training
- ❑ Demand a healthy pessimism – inquisitiveness
- ❑ Stick with basics – disciplined conduct of engineering and operations
- ❑ Safety programs must be visible, critical, empowered, and fully engaged
- ❑ Focus safety efforts on prevention – worst case event failure consideration

Protect the Workers



River Protection Project Mission





2006 A Defining Year for the River Protection Mission



Waste Treatment Plant Construction



Tank Retrieval and Closure Activities



Design and Testing of Supplemental Low-Activity Waste Treatment



Integrated Disposal Facility



Waste Treatment Plant Design and Construction

- ❑ Construction 30% Complete
- ❑ Design 60% Complete
- ❑ Continue construction of Low Activity Waste Facility, Balance of Facilities, Laboratory
- ❑ Suspend construction in PT/HLW facilities to focus on incorporation of revised seismic criteria and on advancing the design
- ❑ Recent issues
 - Cost growth/steel, labor and escalation
 - Technical issues
 - Seismic
 - Hydrogen gas
 - Mixing
 - Ultra-filtration/Concentration
 - Leaching for Chrome and Aluminum



What Could Have Been Done Better

- ❑ Engineering and construction too closely coupled
- ❑ More critical review of baseline quantity/unit install rate estimates
- ❑ Very large projects contingency calculation methodology underestimated impacts of
 - Programmatic risk
 - World economic impacts
 - Under-appreciation of escalation/inflation rates
 - Traditional EPC risks
 - Technical risks inherent in first-of-a-kind nuclear/chemical plant
- ❑ Seismic design criteria should be more directly applicable to the facility siting
- ❑ Industry expert reviews done sooner



What Has Worked

- ❑ Right-sized plant → can complete the mission
- ❑ Well established relationship with State regulators
 - Phased permitting approach
 - Support for milestone changes based on technical/operational restrictions
- ❑ Active Research and Technology program to further reduce risks
 - Ensures a robust and flexible plant
 - Developed backup unit operations
 - Evaluated various processing options/sequences
 - Increased plant throughputs and capacities
- ❑ System optimization between WTP and Tank Farms



Overall Lessons Learned

- ❑ Baselines for very large complex technical projects should be established on at least 60% design
 - R&D complete/Technical risk low
 - Reliable quantity/unit rate information
 - Sufficient time between engineering and construction
 - Cost and schedule contingency based on project maturity and technical risk – assumptions understood and agreed to
- ❑ Project management strategy should be in place prior to establishing commitments
- ❑ Establish strong, competent DOE organization (engineering, Federal Project Directors, etc.) early in Project design phase
- ❑ Certified Earned Value Management System should be included in Project management/control strategy
- ❑ Contracts should include DOE Order 413.3 from the outset



Restoring Confidence and Credibility

- ☐ Secretary's Direction
- ☐ Bottom's up EAC
- ☐ More rigorous reporting
- ☐ Comprehensive validation review
- ☐ EM Office of project recovery established
- ☐ After Action Fact Finding Review
- ☐ Industry Expert Reviews



Tank Waste Retrieval

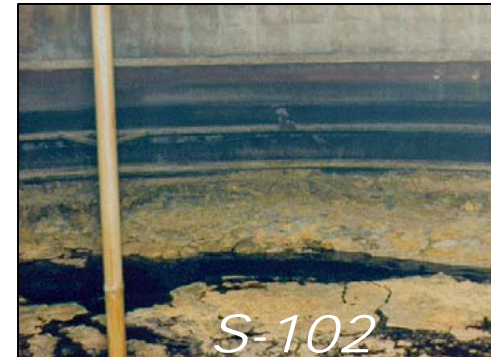
- ❑ Retrieval of waste from older single-shell tanks continues
- ❑ Technologies based on waste characteristics and tank physical condition
- ❑ Demonstrating achievability of 99% waste retrieval
- ❑ Working with State of Washington and Nuclear Regulatory Commission on retrieval effectiveness
- ❑ Managing available Double-Shell tank space





Tank Waste Retrieval - Progress

RETRIEVED



IN PROGRESS





Bulk Vitrification Technology Demonstration Program



- ☐ Results to date indicate that the technology can immobilize Low Activity Waste comparable to Waste Treatment Plant
- ☐ Bulk Vitrification allows for treatment flexibility in treating difficult waste streams
- ☐ Secondary waste is minimized and recycled within the process or sent to Effluent Treatment Facility (no orphan waste streams)
- ☐ Results from bulk vitrification testing have application to Waste Treatment Plant operations (i.e. off-gas system technology/performance and waste form qualification)
- ☐ May allow for interim Low Activity Waste treatment prior to Waste Treatment Plant startup



Integrated Disposal Facility

- ☐ Constructed under a temporary authorization in cooperation with State of Washington
- ☐ Will be operated under State issued RCRA permit for mixed waste cell
- ☐ Construction nearing completion
- ☐ Will be operationally ready and permitted for vitrified low activity waste initially



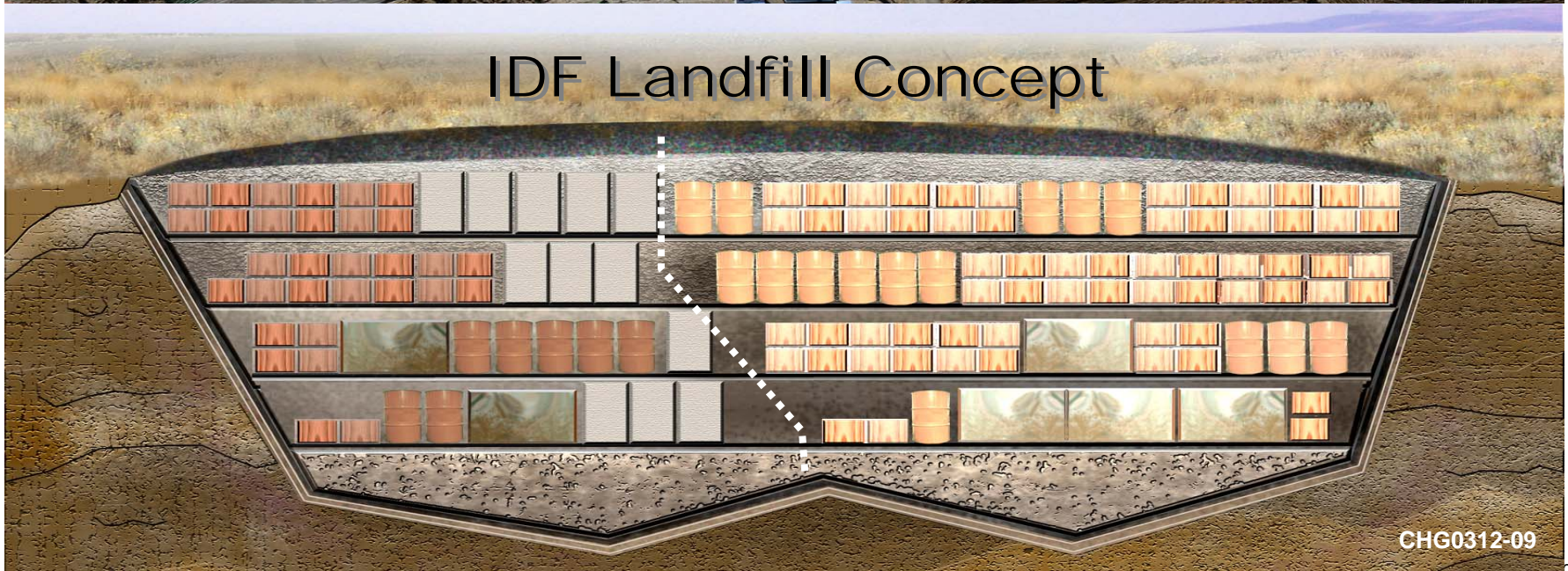
Integrated Disposal Facility

Aerial View of the Integrated Disposal Facility (IDF) Site



*Date: 12/21/04
Mass Excavation
Completed*

IDF Landfill Concept



CHG0312-09



Conclusion

- ❑ Safety is our top priority – Our workers are our greatest asset
- ❑ Department of Energy committed to the Office of River Protection mission
- ❑ The Waste Treatment Plant is the cornerstone of Hanford Tank Waste cleanup
- ❑ Supplemental Technologies are yielding promising results progressing
- ❑ Tailored tank waste retrieval technologies are working
- ❑ Participation of regulators, stakeholders and tribal nations is key to our success